

AMENDMENTS TO THE CLAIMS

## WE CLAIMS (clean copy)

- 5 1. (currently amended) A method of cascaded policing of a service for a two-tier rate guarantee comprising the steps of:
- (a) policing the service at a service rate guarantee based upon a leaky bucket mechanism, wherein the leaky bucket has a finite traffic capacity for said service, the finite traffic capacity comprising a first class traffic capacity having
- 10 a first class rate guarantee and a second class traffic capacity having a second class rate guarantee, which is lower than the first class rate guarantee;
- (b) policing the first class traffic capacity at the first class rate guarantee based upon a leaky bucket mechanism, said leaky bucket having a traffic capacity, which is equal to the first class traffic capacity;
- 15 (c) policing the second class traffic capacity at the second class rate guarantee based upon a leaky bucket mechanism, said leaky bucket having a traffic capacity which is equal to the second class traffic capacity; and
- (d) if not all of the capacity of the leaky bucket of the first class traffic is being used,
- 20 (i) storing the second class traffic capacity, which is not being policed in step (c) into said leaky bucket, and
- (ii) policing the traffic capacity in said leaky bucket at an aggregate rate of the first class rate guarantee and the second class rate guarantee.
- 25 2. (original) The method according to claim 1, wherein the first class traffic capacity being marked as conforming if allowed by the first class rate guarantee and non-conforming if found to exceed the first class rate guarantee.
- 30 3. (original) The method according to claim 1, wherein the second class traffic capacity being marked as conforming if allowed by the aggregate rate of the first class rate guarantee and the second class rate guarantee and non-conforming if found to exceed the aggregate rate of the first class rate guarantee and the second

class rate guarantee.

4. (currently amended) The method according to claim 1, wherein the steps (b)  
and (c) comprise policing at a traffic class rate guarantee and a traffic class burst  
5 tolerance guarantee.

5. (currently amended) A method of cascaded policing of a service for a two-tier  
rate guarantee comprising the steps of:

- 10 (e) policing the service at a service rate guarantee based upon a leaky bucket  
mechanism, wherein the leaky bucket has a finite traffic capacity for said  
service, the finite traffic capacity comprises a plurality of classes of traffic  
capacities having their respective plurality of traffic classes rate guarantees  
arranged in a descending order of priorities;
- 15 (f) policing at least one of the plurality of classes of traffic capacities at its  
respective traffic class rate guarantee based upon a leaky bucket mechanism,  
said leaky bucket has a traffic capacity which is equal to the at least one of the  
plurality of classes of traffic capacities;
- 20 (g) policing each of the remaining plurality of classes of traffic capacities at its  
respective traffic class rate guarantee based upon cascaded leaky buckets  
mechanism, each of the leaky buckets has a traffic capacity which is equal to  
each of the remaining plurality of classes of traffic capacities; and
- (h) if not all of the capacity of the leaky bucket of said at least one of the plurality  
of classes of traffic capacities is being used,
- 25 (v) storing one or more of the remaining classes of traffic capacities of said  
plurality of classes of traffic capacities, which have lower traffic classes  
rate guarantees and have not being policed in step (g), into said leaky  
bucket, and
- (vi) policing the classes of traffic capacities in said leaky bucket at an  
aggregate rate of the plurality of traffic classes rate guarantees.

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6. (currently amended) The method according to claim 5, wherein the at least  
one of the plurality of classes of traffic capacities is marked as conforming if  
allowed by its respective traffic class rate guarantee and non-conforming if found

to exceed its respective traffic class rate guarantee.

7. (currently amended) The method according to claim 5, wherein each of the remaining plurality of classes of traffic capacities is marked as conforming if  
 5 allowed by the aggregate rate of the plurality of traffic classes rate guarantees and non-conforming if found to exceed the aggregate rate of the plurality of traffic classes rate guarantees.
8. (currently amended) A method of cascaded policing of a service for a two-tier  
 10 rate guarantee comprising the steps of:
- (i) policing the service at a service rate guarantee based upon a leaky bucket mechanism, wherein the leaky bucket has a finite traffic capacity for said service, the finite traffic capacity comprises a plurality of N classes of traffic capacities,  $C_i$ ,  $i=1, 2, \dots, N$  and  $N>2$ , having their respective plurality of traffic  
 15 classes rate guarantees,  $R_i$ ,  $i=1, 2, \dots, N$  and  $N>2$  arranged in a descending order of priorities;
  - (j) policing the  $C_i$  traffic capacity at its respective traffic class rate guarantee  $R_i$  based upon a leaky bucket mechanism, said leaky bucket has a traffic capacity, which is equal to the  $C_i$  traffic capacity;
  - 20 (k) policing each of the  $C_1, C_2, \dots, C_{i-1}$  traffic capacities at its respective traffic class rate guarantee  $R_1, R_2, \dots, R_{i-1}$  based upon cascaded leaky buckets mechanism, the cascaded leaky buckets having  $C_1, C_2, \dots, C_{i-1}$  traffic capacities; and
  - (l) if not all of the capacity of the leaky bucket of the  $C_i$  traffic capacity is being  
 25 used,
  - (x) storing one or more of the  $C_1, C_2, \dots, C_{i-1}$  traffic capacities, which have not being policed in step (k), into said leaky bucket, and
  - (xi) policing the traffic capacities in said leaky bucket at an aggregate rate

$$RA_i, \text{ which is } RA_i \sum_{i=1}^N R_i.$$

9. (currently amended) The method according to claim 8, further comprising the steps of:

- (m) policing the service at a service burst tolerance guarantee based upon a leaky bucket mechanism, wherein the leaky bucket has a finite traffic capacity for said service, the finite traffic capacity comprises a plurality of N classes of traffic capacities,  $C_i$ ,  $i=1, 2, \dots, N$  and  $N>2$ , having their respective plurality of burst tolerance guarantees,  $BT_i$ ,  $i=1, 2, \dots, N$  and  $N>2$ ;
- (n) policing the  $C_i$  traffic capacity at its respective burst tolerance guarantee  $BT_i$  based upon a leaky bucket mechanism, said leaky bucket has a traffic capacity, which is equal to the  $C_i$  traffic capacity;
- (p) policing each of the  $C_1, C_2, \dots, C_{i-1}$ , traffic capacities at its respective burst tolerance guarantee  $BT_1, BT_2, \dots, BT_{i-1}$  based upon cascaded leaky buckets mechanism, the cascaded leaky buckets having  $C_1, C_2, \dots, C_{i-1}$  traffic capacities; and
- (q) if not all of the capacity of the leaky bucket of the  $C_i$  traffic capacity is being used,
  - (a) storing one or more of the  $C_1, C_2, \dots, C_{i-1}$ , traffic capacities, which is not being policed in step (p), into said leaky bucket, and
  - (b) policing the traffic capacities of said leaky bucket at an aggregate burst tolerance guarantee  $BA_i$ , which is  $BA_i = \sum_{i=1}^N BT_i$ .

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17. (currently amended) An apparatus for cascaded policing of a service for a two-tier rate guarantee comprising:

- 5 (r) a policer, policing the service at a service rate guarantee, the policer having a buffer storage for a finite traffic capacity for said service, the finite traffic capacity comprising a first class traffic capacity having a first class rate guarantee and a second class traffic capacity having a second class rate guarantee, which is lower than the first class rate guarantee;
- 10 (s) a policer, policing the first class traffic capacity at the first class rate guarantee, the policer having a buffer storage for a traffic capacity, which is equal to the first class traffic capacity;
- (t) a policer, policing the second class traffic capacity at the second class rate guarantee, the policer having a buffer storage for a traffic capacity which is equal to the second class traffic capacity; and
- 15 (u) a policer, policing the second class traffic capacity, which is not being policed in step (t) at an aggregate rate of the first class rate guarantee and the second class rate guarantee, if not all of the capacity of the buffer storage of the first class traffic has been used.

20 18. (original) The apparatus as described in claim 17, wherein the policer comprises means for marking the first traffic capacity as conforming if allowed by the first class rate guarantee and non-conforming if found to exceed the first class rate guarantee.

25 19. (original) The apparatus as described in claim 17, wherein the policer comprises means for marking the second traffic capacity as conforming if allowed by an aggregate rate of the first class rate guarantee and the second class rate guarantee and non-conforming if found to exceed the aggregate rate of the first class rate guarantee and the second class rate guarantee.

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20. (original) The method as described in claim 8, wherein each of the  $C_i$ ,  $i = 1, 2, \dots, N$  and  $N > 2$ , traffic capacities being marked as conforming if allowed by its

respective traffic class rate guarantee  $R_i$ ,  $i=1, 2, \dots, N$  and  $N>2$  and non-conforming if found to exceed its respective traffic class rate guarantee,  $R_i$ ,  $i=1, 2, \dots, N$  and  $N>2$ .

- 5 21. (original) The method as described in claim 8, wherein each of the  $C_1, C_2, \dots, C_{i-1}$ , traffic capacities being marked as conforming if allowed by the aggregate rate  $RA_i$ , which is  $RA_i = \sum_{i=1}^N Ri$  and non-conforming if found to exceed the aggregate rate  $RA_i$  which is  $RA_i = \sum_{i=1}^N Ri$ .
- 10 22. (new) The method as described in claim 1, wherein the step (a) comprises policing at a service rate guarantee and a service burst tolerance guarantee.
- 15 23. (new) The method as described in claim 5, wherein the steps (f) and (g) comprise policing at a traffic class rate guarantee and a traffic class burst tolerance guarantee.
24. (new) The method as described in claim 5, wherein the step (e) comprises policing at a service rate guarantee and a service burst tolerance guarantee.
- 20 25. (new) The apparatus as described in claim 17, wherein the policer is a leaky bucket mechanism.
- 25 26. (new) The apparatus as described in claim 17, wherein the policer comprises a buffer storage for storing the first class traffic capacity and another buffer storage for storing the second class traffic capacity.
- 30 27. (new) The apparatus as described in claim 17, wherein the steps (s) and (t) comprise means for policing at a traffic class rate guarantee and a traffic class burst tolerance guarantee.
28. (new) The apparatus as described in claim 17, wherein the step (r) comprises means for policing at a service rate guarantee and a service burst tolerance

guarantee.

29. (new) A method of cascaded policing of a service for a two-tier rate guarantee comprising the steps of:

- 5 (i) policing the service at a service rate guarantee comprising storing the service in a service buffer storage having a finite traffic capacity for said service, the finite traffic capacity comprising a plurality of N classes of traffic capacities,  $C_i$ ,  $i=1, 2, \dots, N$  and  $N>2$ , having their respective plurality of traffic classes rate guarantees,  $R_i$ ,  $i=1, 2, \dots, N$  and  $N>2$  arranged in a descending order of
  - 10 priorities;
  - (ii) policing the  $C_i$  traffic capacity at its respective traffic class rate guarantee  $R_i$ , the policing comprising storing said traffic capacity in a  $C_i$  buffer storage having a traffic capacity which is equal to the  $C_i$  traffic capacity;
  - (iii) policing each of the  $C_1, C_2, \dots, C_{i-1}$  traffic capacities at its respective traffic
    - 15 class rate guarantee  $R_1, R_2, \dots, R_{i-1}$ , comprising storing the  $C_1, C_2, \dots, C_{i-1}$  traffic capacities in (i-1) cascaded buffers storage having the  $C_1, C_2, \dots, C_{i-1}$  traffic capacities, respectively; and
    - (iv) if not all of the capacity of the  $C_i$  buffer storage for the  $C_i$  traffic capacity is being used, storing one or more of the  $C_1, C_2, \dots, C_{i-1}$  traffic capacities in said
      - 20 buffer storage and policing the traffic capacities in said buffer storage, which have not being policed in step (iii), at an aggregate rate  $RA_i$ , which is

$$RA_i = \sum_{i=1}^N R_i .$$

30. (new) The method as described in claim 29, wherein the policing is effected based upon a leaky bucket mechanism.

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31. (new) The method as described in claim 29, wherein the policing comprises storing each of the  $C_i$ ,  $i=1, 2, \dots, N$ ,  $N>2$  traffic capacities in a corresponding  $C_i$ , and  $i=1, 2, \dots, N$ , buffer storage.

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32. (new) The method as described in claim 29, wherein each of the  $C_i$ ,  $i = 1, 2, \dots, N$  and  $N > 2$ , traffic capacities being marked as conforming if allowed by its respective traffic class rate guarantee  $R_i$ ,  $i = 1, 2, \dots, N$  and  $N > 2$  and non-conforming if found to exceed its respective traffic class rate guarantee,  $R_i$ ,  $i = 1, 2, \dots, N$  and  $N > 2$ .
33. (new) The method as described in claim 29, wherein each of the  $C_1, C_2, \dots, C_{i-1}$ , traffic capacities being marked as conforming if allowed by the aggregate rate  $RA_i$ , which is  $RA_i = \sum_{i=1}^N R_i$  and non-conforming if found to exceed the aggregate rate  $RA_i$ , which is  $RA_i = \sum_{i=1}^N R_i$ .
34. (new) The method as described in claim 29, wherein the steps (ii) and (iii) comprise policing at a traffic class rate guarantee and a traffic class burst tolerance guarantee.
35. (new) The method as described in claim 29, wherein the step (i) comprises policing at a service rate guarantee and a service burst tolerance guarantee.